REMARKS

Claims 1-31 are pending for examination with claims 1, 11, 21, and 31 being independent claims. No new matter has been added.

Rejections under 35 U.S.C. § 102

Claims 1-5, 8, 11-15, 18, 21-25, 28, and 31 stand rejected under 35 U.S.C. § 102 as being anticipated by Smith, C. Performance Engineering of Software Systems, Addison-Wesley Publishing, ISBN 0-201-53769-9, 1990 [hereinafter Smith]. Applicant respectfully traverses the rejection as follows.

As noted in Applicant's response dated June 8, 2004, Smith is directed to a method for predicting software performance , involving the construction of a model of software execution which can be solved for indicative performance metrics. Smith discusses parallel and distributed processing in Sections 8.4 and 8.6, where a distributed processing system contains multiple autonomous processors. The transmission delays and contention delays on the remote system may be modeled by creating a delay node for the submodel node, setting the service time equal to the lower bound on the network transmission delay and the service times on remote devices, and assuming that there is an equal distribution of remote requests across the network. (*See* Smith, Page 396). More particularly, Smith assumes that the transmission delay is an environment specification obtained from measurements of the network under loaded conditions or from performance walkthroughs. (*See* Smith, p. 400). With reference to discussing the elapsed time of the processing which produces a message, Smith specifically states that "it is nontrivial to correctly estimate the actual delay time."

Independent Claim 1

Claim 1 recites, *inter alia*, creating a contention structure created by summing together routing structure elements for active message events. Smith neither discloses nor suggests creating a contention structure by summing together routing structure elements for active message events. However, the Examiner suggests that Smith discloses summing routing structure elements by disclosing and average time to process a request for users where the number of users is a routing structure element. Applicant disagrees that the number of users is a routing structure element of the routing structure

based on a network configuration and a source network node and destination network node of the active message. Rather, number of users is related to the workload of a system and the active messages in a networked system, but is not an element of a routing structure for an active message from a source network node to a destination network node. Moreover, even if the number of users were a routing structure element, the summing to calculate the average time to process a request does not teach or suggest summing routing structure elements to create a contention structure. More particularly, the average time to process a request is not a contention structure.

Claim 1 also recites, *inter alia*, first calculating, for the first active message, an available bandwidth for use by the message at a path between network nodes utilized by the active message. The Examiner suggests that bandwidth corresponds to capacity, and utilization and throughput, as defined by Smith, are measurements directly related to capacity. Applicant disagrees that utilization and throughput, as defined by Smith, are measurements of capacity of a *path* as recited in claim 1. Rather, Smith teaches that utilization is the "percentage of the time the server is busy providing service" and throughput is "the average rate at which jobs complete serve." These definitions suggest that utilization and throughput are related to *CPU* capacity, not capacity of a *path* between network nodes as recited in claim 1. In fact, none of the cited sections of Smith teach or suggest considering the bandwidth of the path between network nodes, rather as noted above, Smith suggests using an average time to approximate the transmission delay between network nodes.

Smith does not teach or suggest, second calculating, for the first active message, based upon the available bandwidth, a modeled communication delay to communicate at least a portion of the first active message" as recited in claim 1. In contrast, as noted above, Smith suggests using an average time to approximate the transmission delay between network nodes. This average transmission delay is determined from network measurements or performance walkthroughs, which are not based upon an available bandwidth of the first active message. (*See* Smith, p. 400).

Thus, claim 1 patentably distinguishes over Smith such that the rejection under § 102 should be withdrawn. Claims 2-10 depend from claim 1, and for at least the foregoing reasons are also patentable over Smith.

In addition, claim 2 recites, *inter alia*, identifying an event horizon corresponding to a simulated time duration before an event change state. The Examiner suggests that Smith discloses identifying an event horizon corresponding to a simulated time duration before an event change state by citing Smith (p. 329) "Similarly, the sampling interval for monitors must be short enough to detect the states of interest, but not too short; otherwise the amount of data collected (thus the measurement overhead) is much greater than necessary." Applicant disagrees that this cited section of Smith teaches or suggests identifying an event horizon corresponding to a simulated time duration before an event change state. As defined by the Applicant in the Specification at page 18, lines 13-17 and lines 28-30 defines an event horizon as the time until the event with the shortest duration to completion or creation based on communication delays. In contrast, a sampling interval of a monitor for events is the time step taken between detecting a change in the states of interest. As noted by Smith, if this time step is too small, then the collected data may increase measurement overhead, and if the time step is too small, then event changes may be undetected. Accordingly, a time step or sampling time to detect an event change is not an event horizon corresponding to a simulated time duration before an event change state.

Thus, claim 2 patentably distinguishes over Smith such that the rejection under § 102 should be withdrawn.

In addition, claim 3 recites, *inter alia*, advancing a simulation clock based upon the event horizon. The Examiner suggests that Smith discloses advancing a simulation clock based upon the event horizon by citing Smith (p. 329) "For example, the granularity of events must match the resolution of the system clock used to time them. The events should not be too short compared to the clock's time units ...." Applicant disagrees that this cited section of Smith teaches or suggests advancing a simulation clock based upon the event horizon. The system clock merely generates a steady stream of timing pulses that synchronize an operation. These timing impulses are not the simulation clock, much less advancing the simulation clock based upon the previously defined event horizon.

Thus, claim 3 patentably distinguishes over Smith such that the rejection under § 102 should be withdrawn.

Independent Claim 11

Smith does not teach or suggest the features of claim 11 including, *inter alia*, creating a contention structure created by summing together routing structure elements for active message events. As noted above with respect to claim 1, Smith does not teach or suggest summing together routing structure elements for active message events, since number of users are not routing structure elements. Even if the number of users were routing structure elements, the average time to process a message is not a contention structure. Smith also does not teach or suggest calculating, for the first active message, an available bandwidth for use by the message at a path between network nodes. Rather, Smith teaches considering the utilization and throughput of a *CPU*, not bandwidth of a *path* between network nodes. Moreover, Smith does not teach or suggest calculating, for the first active message, a modeled communication delay based upon the available bandwidth. Rather, Smith approximates a transmission delay based upon network measurements or performance walkthroughs. (*See* Smith, p. 400).

Thus, Smith does not disclose or suggest the elements recited in claim 11, and accordingly, claim 11 is not rendered obvious by Smith and the rejection under § 102 should be withdrawn. Claims 12-20 depend from claim 11 and are patentable for at least the foregoing reasons.

Independent Claim 21

Smith does not teach or suggest the features of claim 21 including, *inter alia*, creating a contention structure created by summing together routing structure elements for active message events. As noted above with respect to claim 1, Smith does not teach or suggest summing together routing structure elements for active message events, since number of users are not routing structure elements. Even if the number of users were routing structure elements, the average time to process a message is not a contention structure. Smith also does not teach or suggest calculating, for the first active message, an available bandwidth for use by the message at a path between network nodes. Rather, Smith teaches considering the utilization and throughput of a *CPU*, not bandwidth of a path between network nodes. Moreover, Smith does not teach or suggest calculating, for the first active message, a modeled communication delay based upon the available

bandwidth. Rather, Smith approximates a transmission delay based upon network measurements or performance walkthroughs. (*See* Smith, p. 400).

Thus, Smith does not disclose or suggest the elements recited in claim 21, and accordingly, claim 21 is not rendered obvious by Smith and the rejection under § 102 should be withdrawn. Claims 22-30 depend from claim 21 and are patentable for at least the foregoing reasons.

Independent Claim 31

Smith does not teach or suggest the features of claim 31 including, *inter alia*, a contention structure generator for creating a contention structure created by summing together routing structure elements for active message events As noted above with respect to claim 1, Smith does not teach or suggest summing together routing structure elements for active message events, since number of users are not routing structure elements. Even if the number of users were routing structure elements, the average time to process a message is not a contention structure. Smith also does not teach or suggest a bandwidth availability calculator for first calculating, for the first active message, an available bandwidth for use by the message at a path between network nodes. Rather, Smith teaches considering the utilization and throughput of a *CPU*, not bandwidth of a *path* between network nodes. Moreover, Smith does not teach or suggest a delay calculator for second calculating, for the first active message, a modeled communication delay based upon the available bandwidth. Rather, Smith approximates a transmission delay based upon network measurements or performance walkthroughs. (*See* Smith, p. 400).

Thus, Smith does not disclose or suggest the elements recited in claim 31, and accordingly, claim 31 is not rendered obvious by Smith and the rejection under § 102 should be withdrawn.

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Rejections under 35 U.S.C. § 103

Claims 6-7, 16-17, and 26-27 stand rejected under 35 U.S.C. § 103 as being unpatentable over Smith in view of Anderson, A., "The Routing Table," http://www.tldp.org/LDP/nag/node31.html, updated March 7, 1996 [hereinafter Routing Table]. Applicant respectfully traverses the rejection as follows.

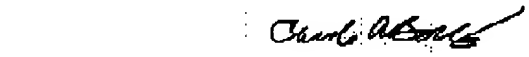
Claims 6-7 depend from independent claim 1, and are patentable for at least the same reasons set forth above. Similarly, claims 16-17, depend from independent claim 11 and are patentable for at least the same reasons set forth above. Claims 26-27 depend from independent claim 21 , and are patentable for at least the same reasons as set forth above.

CONCLUSION

In view of the foregoing amendments and remarks, this application should now be in condition for allowance. A notice to this effect is respectfully requested. If the Examiner believes, after this amendment, that the application is not in condition for allowance, the Examiner is requested to call the Applicant's attorney at the telephone number listed below.

If this response is not considered timely filed and if a request for an extension of time is otherwise absent, Applicant hereby requests any necessary extension of time. If there is a fee occasioned by this response, including an extension fee, please charge any deficiency to **Deposit Account No. 50-0463.**

Respectfully submitted,
Papaefstathiou., Applicant



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